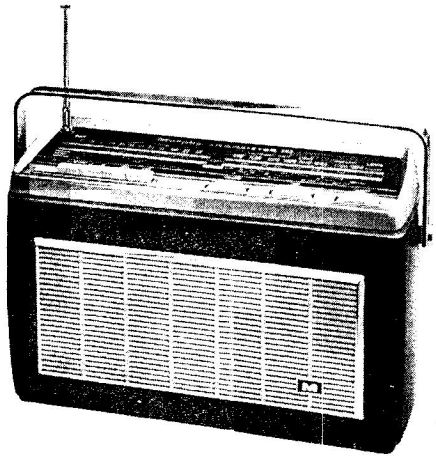
SERVICE INSTRUCTIONS

Murphy

MODEL B831 PORTABLE RADIO



4558

SPECIFICATION

GENERAL

Model B831 is a battery operated portable receiver with coverage of the Long, Medium and V.H.F. wavebands. The receiver has an additional range which provides electrical bandspread of the high frequency end of the Medium waveband.

The receiver incorporates ten transistors and three crystal diodes, an internal ferrite rod aerial for the Long, Medium and Bandspread ranges and a telescopic rod aerial for the V.H.F. waveband. A socket enabling the receiver to be used with a car aerial is also fitted, being operative on the a.m. wavebands only when dispatched from the factory. The car aerial socket may be used on the f.m. band instead of the a.m. bands after suitable modification.

PRESENTATION

The receiver has a four-piece moulded cabinet with front rear and sides covered with dark grey/blue material. The side trims are finished in sprayed silver whilst the loudspeaker grille and the small grille at the rear of the cabinet are of moulded plastic. Combined with the scale is a satin finished silver strip beneath which is mounted the five button switch unit. To the right of the press buttons are the three edge operated controls moulded in off-white. The cabinet is fitted with a full width carrying handle in polished aluminium. The detachable moulded base is secured by two quick release catches and affords access to the batteries which are retained to the moulding by two straps. Projecting through the scale in the top left-hand corner of the receiver is the telescopic rod aerial. The car aerial socket is located on the left-hand side of the cabinet. A socket for use with an earpiece is mounted at the rear of the cabinet on the left-hand edge of the top moulding.

CABINET DIMENSIONS

Height: $7\frac{3}{8}$ in. (18·7 cm)
Width: $12\frac{1}{2}$ in. (31·8 cm)
Depth: $4\frac{1}{4}$ in. (10·8 cm)

The above dimensions include projections. The total height with the carrying handle erected is $8\frac{7}{8}$ in. (22·5 cm)
Weight: 4 lb 15 oz (2·2 kg)

CONTROLS

Top left: Five press buttons selecting—Off; Bandspread; L.W.; M.W.; V.H.F.
Top right: Volume; Tone; Tuning.

WAVEBANDS

L.W. band—1,070-1,900 metres (280 to 158 kc/s)
M.W. band—185-570 metres (1,625 to 525 kc/s)
B.S. band—185-210 metres (1,625 to 1,425 kc/s)
F.M. band—87·5-100 Mc/s (3·4 to 3 metres)

AERIALS

An internal ferrite rod aerial is fitted serving the three a.m. ranges. A telescopic rod aerial is fitted for use on the f.m. band. Additionally, a car type aerial socket is provided which is operative on the a.m. bands only as supplied. The receiver may be modified so that the aerial socket is operative on the f.m. band instead of the a.m. bands. No aerial changeover switch is fitted.

AUTOMATIC GAIN CONTROL

Two controlled stages on a.m. only.

INTERMEDIATE FREQUENCIES

A.M. 470 kc/s, oscillator high with respect to signal.
F.M. 10·7 Mc/s, oscillator low with respect to signal.

BATTERIES

Two Ever Ready PP9 batteries provide the operating voltage of 18 volts. The battery consumption is 19 mA on the a.m. bands and 21 mA on f.m.

AUDIO OUTPUT

1 watt.

LOUDSPEAKER

8 in. × 5 in. (20·3 × 12·7 cm) elliptical. Flux density 8,000 lines per square centimetre. Impedance 25 ohms.

TRANSISTORS

VT1	AF178	r.f. amplifier f.m.
VT2	AF115	mixer f.m.
VT3	AF117	oscillator a.m.
VT4	AF116	mixer a.m., i.f. amplifier f.m.
VT5	AF116	i.f. amplifier
VT6	AF116	i.f. amplifier
VT7	AC127	audio amplifier
VT8	OC81	driver
VT9	AC127	output stage (complimentary pair)
VT10	OC81	output stage (complimentary pair)

CRYSTAL DIODES

Mullard type

D1	OA79	f.m. detector
D2	OA79	f.m. detector
D3	OA90	a.m. detector

PHONE SOCKET

A socket is provided at the rear of the top moulding into which may be plugged an earpiece having an impedance of not less than 50 ohms. Alternatively, this socket may be used with an external loudspeaker of 25 ohms impedance, or for tape recording.

MAINTENANCE

DISMANTLING AND REASSEMBLY

Removing the chassis from the cabinet.

1 Place the cabinet face downwards, remove the detachable base and disconnect the battery leads.

2 Unsolder the loudspeaker connections, the screened aerial feeder from the car aerial socket, also the lead bonding the chassis to the loudspeaker.

3 Release the two spring retainers located either side of the cabinet near its base.

4 Withdraw the chassis, together with the tuning scale and top moulding from the cabinet body by easing the moulding away from the cabinet top.

5 Replace the chassis by reversing the above procedure.

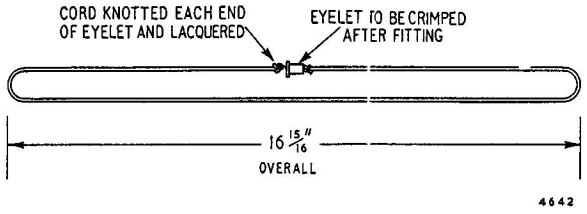


Fig. 1
Assembly of cord drive.

REPLACEMENT OF CORD DRIVE

NOTE: About 40 inches of glass nylon cord will be required to make up the assembly shown in Fig. 1. The correctly fitted cord drive is shown in Fig. 2.

1 Remove the chassis from the cabinet as described above.

2 Release the ferrite rod aerial from its mounting clips, also remove the earpiece socket from the cabinet moulding. Disengage the tuning pointer from the drive cord.

3 Close the tuning capacitor, then remove the three 4BA nuts securing the chassis to the moulding and lift clear.

4 Temporarily anchor the replacement tuning cord at point 'A' (Fig. 2), by means of a wire hook, to a convenient point on the chassis. This will allow the eyelet to take up the position shown in Fig. 2.

5 Pass the cord round the upper pulley at 'B' (Fig. 2), then round the pulley at 'C'.

6 Continue to pass the cord, first under the tuning drum, then wind on 2½ turns, in a counter-clockwise direction, from rear to front of the drum.

7 Locate the cord through the slot in the drum at 'D' (Fig. 2) and engage the cord onto the tension spring at 'E'.

8 Take the free end of the cord out through the same slot and continue to pass the cord round the drum for ½ turn in a counter-clockwise direction.

9 Pass the cord round the lower pulley at 'F' (Fig. 2), temporarily removing the cord from the upper pulley at 'B'. Now wind 3½ turns round the tuning spindle in a counter-clockwise direction, at point 'G'.

10 Re-engage the cord onto the upper pulley at 'B', adjusting the drum tension spring as required. Remove the temporary wire retaining hook and check that the operation of the cord is smooth and positive.

11 Secure the chassis to the moulding and correctly engage the tuning pointer with the drive cord before replacing the ferrite-rod aerial and earpiece socket.

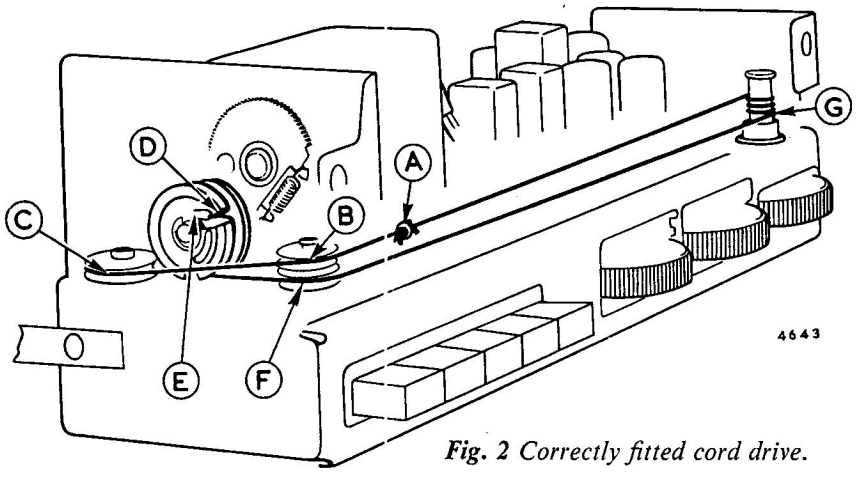


Fig. 2 Correctly fitted cord drive.

ADJUSTMENT OF RP2 AND RP3

RP2 and RP3 are pre-set controls located on top of the receiver chassis (see Fig. 3). They are adjusted during production and should not require further adjustment. If they have been disturbed, or if the output transistors are replaced, they may be re-set as follows:—

1 Set the slider of RP2 to centre position, then set RP3 to minimum.

2 Switch the receiver on by pressing the M. W. button. Set the Volume control to minimum. Make sure the battery voltage is not less than 18 volts.

3 Note that the receiver consumption is approximately 13 mA, then increase this by 4 mA by adjusting RP3. The quiescent consumption should be 14 to 18 mA. (18 to 22 mA on V.H.F.).

4 Now adjust RP2 so that the voltage at the junction of R44, R45 and C61 is 8·7 volts.

ALIGNMENT PROCEDURE

PRELIMINARY NOTES

1 Equipment required:—

(a) An a.m. signal generator to cover 158 kc/s to 1,625 kc/s, 10·7 Mc/s, and 87·5 Mc/s to 100 Mc/s with provision for both modulated and unmodulated signals as required.

(b) A power output meter with ranges to cover 0–1 watt to match 25 ohms impedance.

(c) Suitable trimming tools for adjusting the iron dust cores and r.f. trimmers.

(d) An Avometer model 8—or both a d.c. valve voltmeter (0–2·5 volts) and a microammeter (5–0–5 μA).

(e) A matched pair of 220k, ¼ watt resistors (see Fig. 7).

(f) An i.f. damper consisting of a 470 ohm resistor in series with a 1000 pF capacitor for use during f.m. i.f. alignment.

2 The signal generator should be switched on about 15 minutes before commencing the alignment.

3 Connect the power output meter to the receiver by means of the earphone socket if a suitable plug is available.

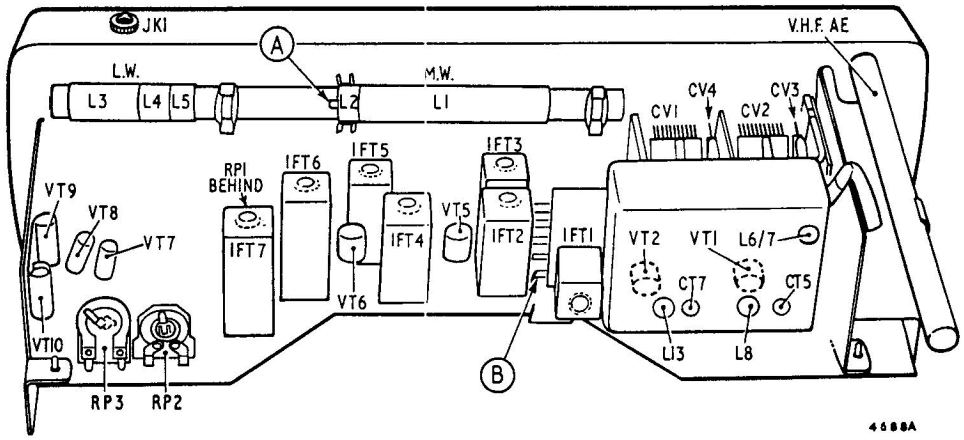


Fig. 3 Chassis layout.

I.F. ALIGNMENT

A.M. Circuits

NOTES: In IFT3 and IFT5 the primary core is located at the bottom of the can and the secondary at the top, IFT7 has one core only which is adjusted from the top of the can. The outer alignment peak is the one for these adjustments.

Ensure that the output of the receiver is maintained at a level of 50 mW by reducing the i.f. signal as necessary.

1 Switch the receiver to the Medium waveband and set the tuning pointer to approximately 1,000 kc/s. Set the Volume control to maximum, and the Tone control for maximum treble response.

2 Set the signal generator to 470 kc/s, modulated 30 per cent at 400 c/s. Inject the output, via a 0·01 μF capacitor to the centre tag of the M.W. aerial coil (point "A" Fig. 3) and chassis (point "B" Fig. 3).

3 Align IFT7; IFT5 secondary and primary; IFT3 secondary and primary, in that order, for maximum audio output. Align each IFT once only.

F.M. Circuits

NOTES: In IFT2, IFT4 and IFT6 the primary core is located at the bottom of the can, and the secondary at the top. IFT1 has one core only which is adjusted from the top of the can. The outer alignment peak is the correct one for these adjustments.

Connect the d.c. output and balance meters, and the two 220k resistors into circuit as shown in Fig. 7. Observe that TP1 of this diagram is the junction R26/C49; TP2 is the top end of C54. Set the slider of the balance control RP1 to point towards the corner of IFT6 screening can.

During the following adjustments, the input signal should be maintained at a level sufficient to produce a voltage output of 0·5–1 volt d.c. on the d.c. output meter.

1 Switch the receiver to the VHF waveband and set the tuning pointer to approximately 94 Mc/s. Set the Volume control to minimum.

2 Set the signal generator to 10·7 Mc/s, amplitude modulated 30 per cent at 400 c/s. Inject the output to the top end of CV3 (Fig. 3) and chassis.

3 Adjust the primary core of IFT6 for maximum on the d.c. output meter.

4 Adjust the secondary core of IFT6 for zero reading on the d.c. balance meter.

5 Connect the i.f. damper unit between chassis and pin 4 of IFT4 then adjust the secondary core of IFT4 for maximum on the d.c. output meter.

6 Re-connect the i.f. damper unit between chassis and pin 1 of IFT4 then adjust the primary core of IFT4 for maximum on the d.c. output meter.

7 Connect the i.f. damper unit between chassis and pin 4 of IFT2 then adjust the secondary core of IFT2 for maximum on the d.c. output meter.

8 Re-connect the i.f. damper unit between chassis and pin 1 of IFT2 then adjust the primary core of IFT2 for maximum on the d.c. output meter.

9 Remove the i.f. damper unit and inject the i.f. signal to the top end of C1/L6 and adjust the core of IFT1 for maximum on the d.c. output meter.

10 Adjust the signal generator to produce 1 volt on the d.c. output meter. Set the receiver Volume control to produce 50mW on the power output meter then adjust the pre-set control RP1 for minimum audio output.

11 Re-adjust the primary core of IFT6 for maximum on the d.c. output meter then re-adjust the secondary core of IFT6 for zero reading on the d.c. balance meter.

12 Repeat operations 10 and 11 as necessary until no further adjustment is required.

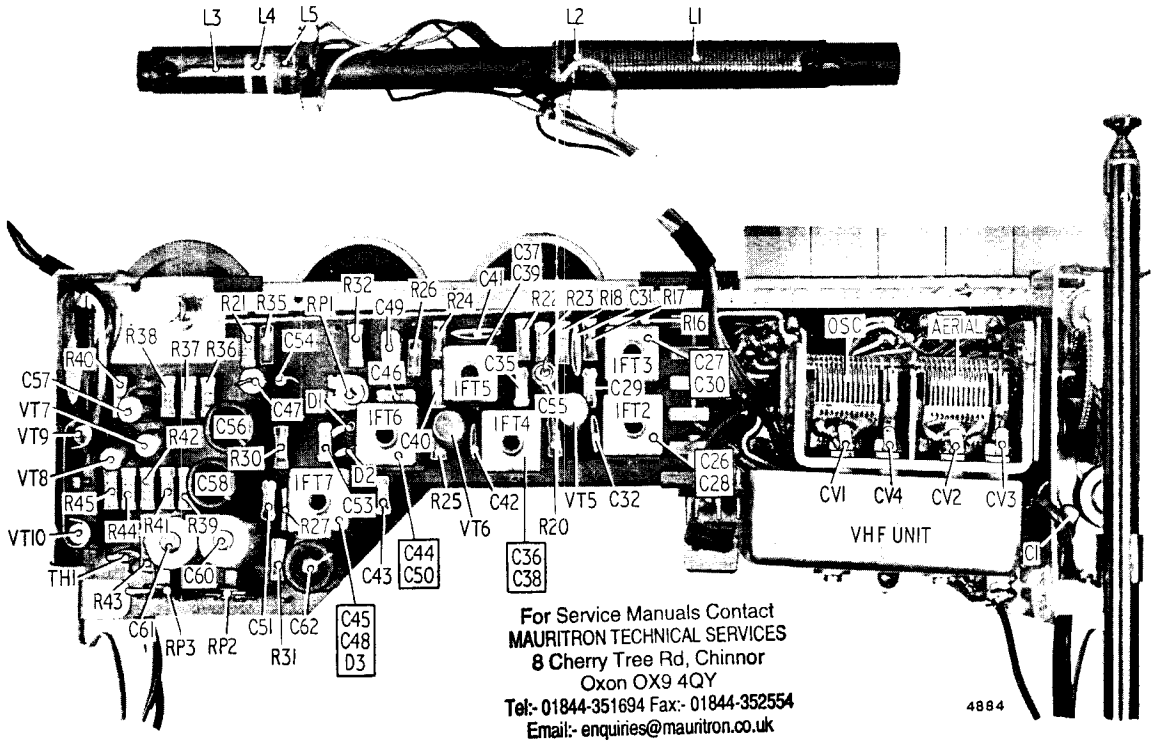

L3 L4 L5 L2 L1
R21 R35 RP1 R32 R26 C49 R24 C41 C37 C39 R22 R23 R18 C31 R17 R16
R38 R37 R36 C54 C46 C35 IFT5 IFT3 C29 IFT2 C27 C30
R40 C57 VT7 VT9 VT8 C56 R42 R30 C47 D1 IFT6 C40 C55 IFT4 C58 IFT7 D2 C53 R45 R44 R41 R39 C60 R43 C61 RP3 RP2 C51 C62 R31 C45 C48 D3 VT10 TH1 R27 C43 C44 C50 R25 C42 VT6 R20 C36 C38 VT5 C32 C26 C28
OSC AERIAL
CV1 CV4 CV2 CV3
VHF UNIT
C1
For Service Manuals Contact
MAURITRON TECHNICAL SERVICES
8 Cherry Tree Rd, Chinnor
Oxon OX9 4QY
Tel:- 01844-351694 Fax:- 01844-352554
Email:- enquiries@mauritron.co.uk
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Fig. 4 Top view of chassis.

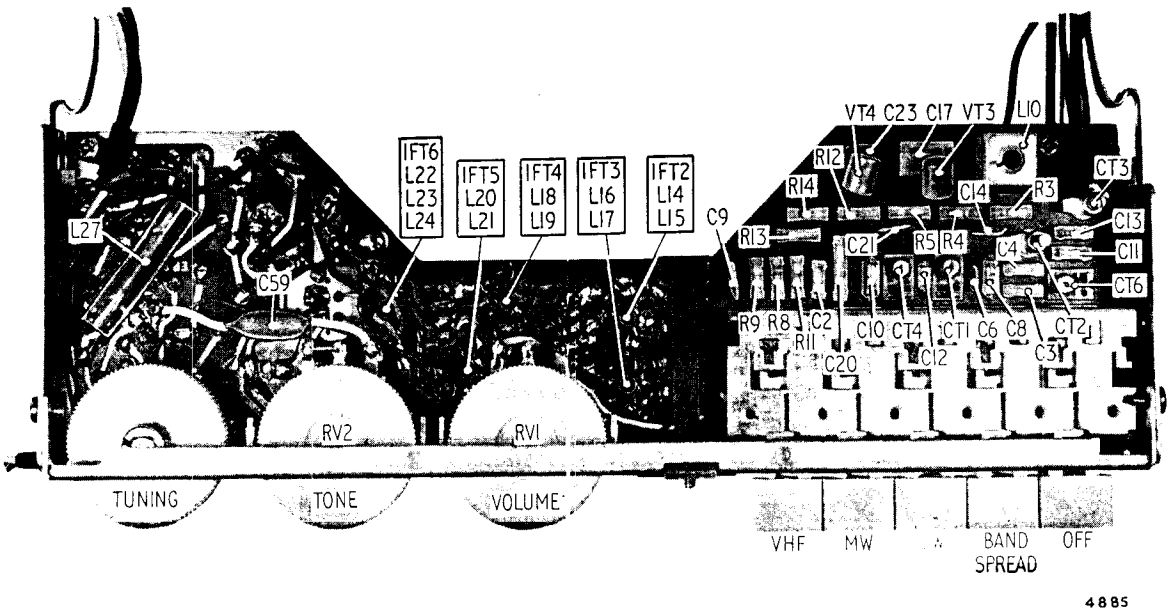
VT4 C23 C17 VT3 L10
IFT6 L22 L23 L24
IFT5 L20 L21
IFT4 L18 L19
IFT3 L16 L17
IFT2 L14 L15
C9
R12 R14 R13 C2 R5 R4 C4 C14 R3 CT3 C13 C11 CT6
L27 C59
R9 R8 C2 R11 C10 CT4 CT1 C6 C8 CT2 C20 C12 C3
RV2 RV1
TUNING TONE VOLUME
VHF MW BAND SPREAD OFF
4885

Fig. 5 Under view of chassis.

R.F. ALIGNMENT

A.M. Circuits

The signal generator should be coupled to the receiver by a loop of insulated wire placed about 3 feet from the receiver and with its plane at right-angles to the ferrite rod aerial. Ensure that the tuning pointer shows half its width at the low frequency edge of the tuning scale when the tuning capacitor is fully meshed. This indication is taken as the pointer datum setting prior to commencing the alignment procedure outlined below.

Set the receiver Volume control to maximum and the Tone control for maximum treble response. During the alignment the signal input should be adjusted to maintain the output at a level of 50mW each time a trimming adjustment is made.

Operation	Waveband	Sig. Gen. Frequency (mod. 30% 400 c/s)	Tuning Pointer Setting	Adjust for Max. Output
1	M.W.	600 kc/s	500 metres*	L10 Osc.
2	M.W.	600 kc/s	500 metres*	L1/2 Ae.†
3	M.W.	1439 kc/s	208 metres*	CT1 Osc.
4	M.W.	1364 kc/s	220 metres	CT6 Ae.
		Repeat operations 1 to 4 and check calibration		
5	L.W.	214 kc/s	1400 metres	CT4 Osc.
6	L.W.	214 kc/s	1400 metres	L3/4/5 Ae.†
		Repeat operations 5 and 6 and check calibration.		
7	Bandspread	1439 kc/s	Luxembourg‡	CT2 Osc.
8	Bandspread	1500 kc/s	200 metres	CT3 Ae.

* Observe calibration dots on respective scales. † Move coil along rod to adjust then reseal with wax.
‡ Set tuning pointer to centre of station name.

F.M. Circuits

Before calibrating the VHF waveband, ensure that the screening cover of the v.h.f. unit is securely in position. Check that the tuning pointer shows half its width at the low frequency edge of the tuning scale when the tuning capacitor is fully meshed.

Switch the receiver to the VHF waveband and connect the output from the signal generator between the telescopic rod aerial (top end of C1/L6) and chassis (earthing tag of CV1/CV2). Connect the d.c. output and balance meters into circuit as for f.m. i.f. alignment.

Calibration

Set the tuning pointer to 94 Mc/s and inject an unmodulated signal of 94 Mc/s. Adjust CT7 (osc.) and CT5 (r.f.) for maximum output on the d.c. output meter.

Aerial Circuit

L6/L7 coil is not adjustable.

NOTE: The cores of the coils L8 and L13 are adjusted during production and should not require further adjustment. If they have been disturbed, they may be re-set in accordance with the following procedure:—

Operation	Sig. Gen. Frequency (unmodulated)	Tuning Pointer Setting	Adjust for max. d.c. output
1	87·5 Mc/s	87·5 Mc/s	L13 Osc.
2	100 Mc/s	100 Mc/s	CT7 Osc.
3	87·5 Mc/s	87·5 Mc/s	L8 R.F.
4	100 Mc/s	100 Mc/s	CT5 R.F.

Repeat operations 1 to 4 until no further adjustment is required, then check calibration at 94 Mc/s and adjust CT7 and CT5 if necessary.

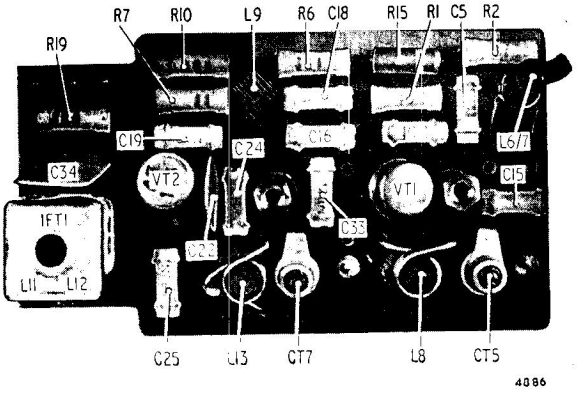

Fig. 6 V.H.F. Unit.

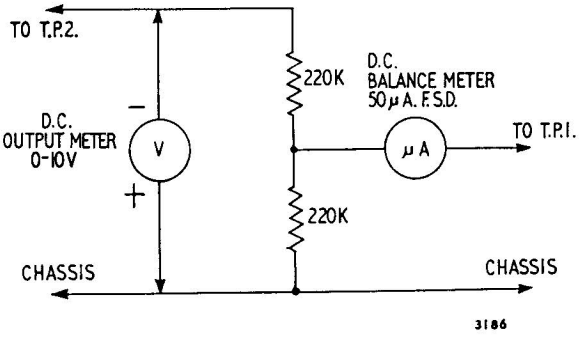

Fig. 7 Connection of meters.

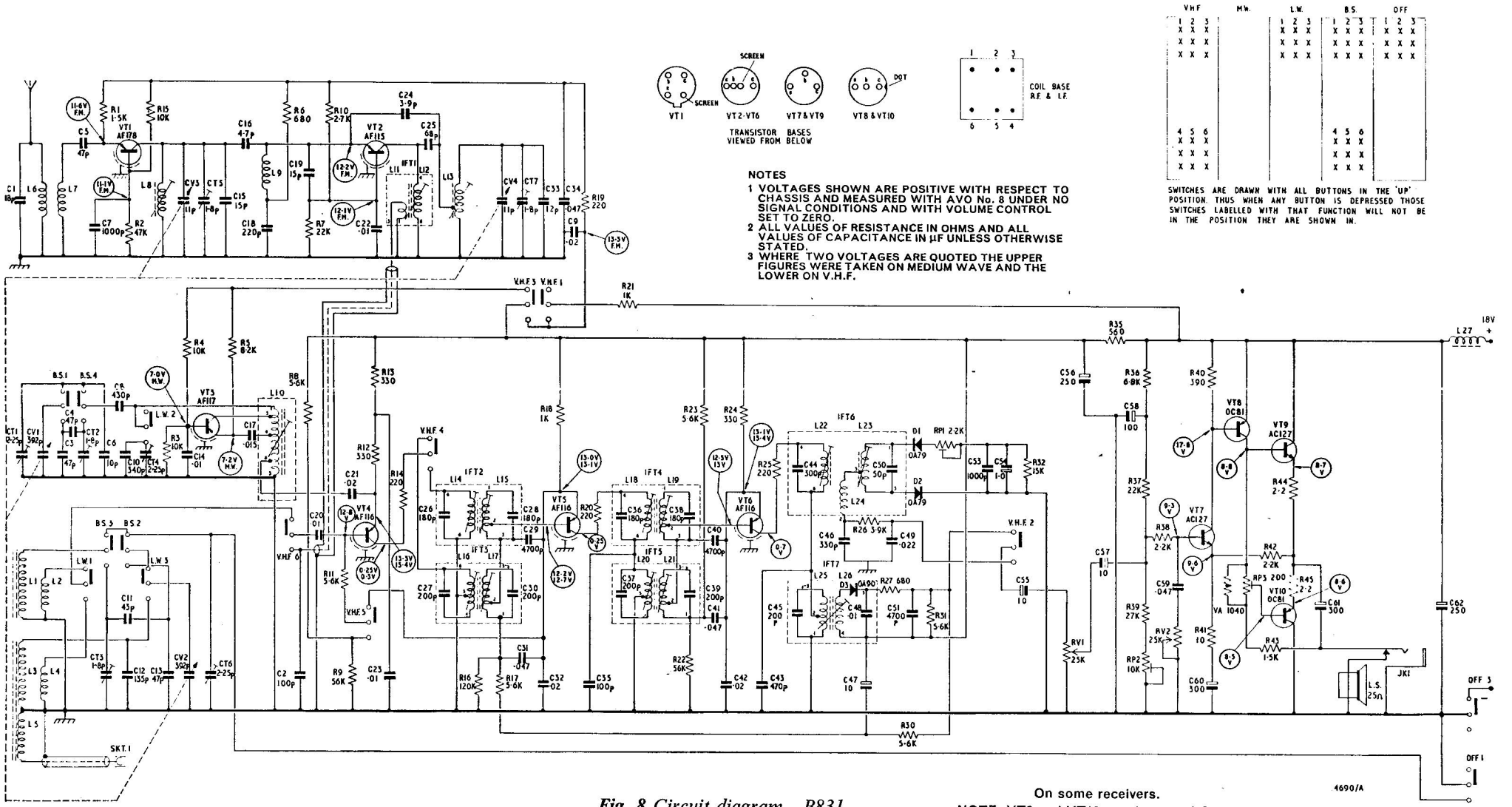
VHF MW. LW. BS. OFF
SCREEN
VT1
VT2-VT6
VT7 & VT9
VT8 & VT10
TRANSISTOR BASES VIEWED FROM BELOW
COIL BASE R.F. & L.F.
NOTES
1 VOLTAGES SHOWN ARE POSITIVE WITH RESPECT TO CHASSIS AND MEASURED WITH AVO No. 8 UNDER NO SIGNAL CONDITIONS AND WITH VOLUME CONTROL SET TO ZERO.
2 ALL VALUES OF RESISTANCE IN OHMS AND ALL VALUES OF CAPACITANCE IN µF UNLESS OTHERWISE STATED.
3 WHERE TWO VOLTAGES ARE QUOTED THE UPPER FIGURES WERE TAKEN ON MEDIUM WAVE AND THE LOWER ON V.H.F.
SWITCHES ARE DRAWN WITH ALL BUTTONS IN THE 'UP' POSITION. THUS WHEN ANY BUTTON IS DEPRESSED THOSE SWITCHES LABELLED WITH THAT FUNCTION WILL NOT BE IN THE POSITION THEY ARE SHOWN IN.
VT1 AF178
VT2 AF115
VT3 AF117
VT4 AF116
VT5 AF116
VT6 AF116
VT7 AC127
VT8 OC81
VT9 AC127
VT10 OC81
IFT1
IFT2
IFT3
IFT4
IFT5
IFT6
IFT7
D1 OA79
D2 OA79
D3 OA90
VA 1040
L.S. 25Ω
JK1
SKT.1
OFF 3
OFF 1
18V
4690/A

Fig. 8 Circuit diagram—B831.

On some receivers.
NOTE: VT8 and VT10 may be type AC128

PARTS LIST

ABBREVIATIONS

E Electrolytic Pe Polyester Ps Polystyrene SC Silver ceramic

CAPACITORS

Reference	Type	Value µF	Value pF	Tolerance (±%)	Rating	Part Number
C1	SC		18	5	750	AP28159
C2	SC		100	10	350	AP81997
C3	SC		47	2·5	750	AP82100
C4	SC		47	2·5	350	AP82177
C5	SC		47	10	750	AP43261
C6	SC		10	10	500	AP81534
C7	SC		1000	20	750	AP43267
C8	Ps		430	1	125	AP81448
C9	SC	0·02		+80 −20	50	AP48724
C10	Ps		340	2·5	125	AP81449
C11	SC		43	2·5	750	AP82098
C12	Ps		135	2·5	125	AP81450
C13	SC		47	2·5	750	AP82100
C14	SC	0·01		+80 −20	50	AP48723
C15	SC		15	5	750	AP31696
C16	SC		4·7	±0·25pF	750	AP31693
C17	Ps	0·015		10	250	AP82083
C18	SC		220	10	750	AP43265
C19	SC		15	5	750	AP31696
C20	SC	0·01		+80 −20	300	AP81354
C21	SC	0·02		+80 −20	50	AP48724
C22	SC	0·01		+80 −20	50	AP48723
C23	SC	0·01		+80 −20	50	AP48723
C24	SC		3·9	±0·25pF	750	AP82082
C25	SC		68	5	750	AP43263
C26	Ps		180	2·5	125	AP64591
C27	Ps		200	2·5	125	AP65010
C28	Ps		180	2·5	125	AP64591
C29	SC		4700	+40 −20	500	AP81353
C30	Ps		200	2·5	125	AP65010
C31*	SC	0·05		+80 −20	50	AP48725
C32	SC	0·02		+80 −20	50	AP48724
C33	SC		12	5	750	AP43256
C34*	SC	0·05		+80 −20	50	AP48725
C35	SC		100	10	350	AP81997
C36	Ps		180	2·5	125	AP64591
C37	Ps		200	2·5	125	AP65010
C38	Ps		180	2·5	125	AP64591
C39	Ps		200	2·5	125	AP65010
C40	SC		4700	+40 −20	500	AP81353
C41*	SC	0·05		+80 −20	50	AP48725
C42	SC	0·02		+80 −20	50	AP48724
C43	SC		470	10	350	AP81810
C44	Ps		300	2·5	125	AP66088
C45	Ps		200	2·5	125	AP65010
C46	SC		330	10	500	AP81809
C47	E	10		+50 −10	64	AP70840
C48	SC	0·01		+80 −25	12	AP65014
C49	Ps	0·022		10	250	AP81998
C50	Ps		50	2·5	125	AP65908
C51	SC		4700	+40 −20	500	AP81353
C52	—	—	—	—	—	—
C53	SC		1000	20	750	AP43267
C54	E	1		+100 −10	40	AP82178
C55	E	10		+50 −10	64	AP70840
C56	E	250		+100 −20	18	AP81428
C57	E	10		+50 −10	64	AP70840
C58	E	100		+100 −20	25	AP67073
C59	Pe	0·047		10	125	AP29932
C60	E	300		+100 −20	12	AP81355
C61	E	300		+100 −20	12	AP81355
C62	E	250		+100 −20	18	AP81428

* 0·047µF on some models.

CAPACITORS, VARIABLE

Reference	Value (pF)	Description	Part Number
CV1	392	A.M. Osc.	
CV2	392	A.M. aerial	(Ganged)
CV3	11	F.M. r.f.	CP81676
CV4	11	M.W. osc.	
CT1	2–25	M.W. osc.	AP81358
CT2	1–8	B.S. osc.	AP81967
CT3	1–8	B.S. aerial	AP81967
CT4	2–25	L.W. osc.	AP81358
CT5	1–8	F.M. r.f.	AP81967
CT6	2–25	M.W. aerial	AP81358
CT7	1–8	F.M. osc.	AP81967

RESISTORS

Reference	Value (ohms)	Tolerance (±%)	Rating (watts)	Part Number
R1	1·5k	10	¼	AP32896
R2	47k	10	¼	AP33004
R3	10k	10	¼	AP32956
R4	10k	10	¼	AP32956
R5	8·2k	10	¼	AP32950
R6	680	10	¼	AP32872
R7	22k	10	¼	AP32980
R8	5·6k	10	¼	AP32938
R9	56k	10	¼	AP33010
R10	2·7k	10	¼	AP32914
R11	5·6k	10	¼	AP32938
R12	330	10	¼	AP32848
R13	330	10	¼	AP32848
R14	220	10	¼	AP32836
R15	10k	10	¼	AP32956
R16	120k	10	¼	AP33034
R17	5·6k	10	¼	AP32938
R18	1k	10	¼	AP32884
R19	220	10	¼	AP32836
R20	220	10	¼	AP32836
R21	1k	10	¼	AP32884
R22	56k	10	¼	AP33010
R23	5·6k	10	¼	AP32938
R24	330	10	¼	AP32848
R25	220	10	¼	AP32836
R26	3·9k	10	¼	AP32926
R27	680	10	¼	AP32872
R28	—	—	—	—
R29	—	—	—	—
R30	5·6k	10	¼	AP32938
R31	5·6k	10	¼	AP32938
R32	15k	10	¼	AP32968
R33	—	—	—	—
R34	—	—	—	—
R35	560	10	¼	AP32866
R36	6·8k	10	¼	AP32944
R37	22k	10	¼	AP32980
R38	2·2k	10	¼	AP32908
R39	27k	10	¼	AP32986
R40	390	10	¼	AP32854
R41	10	10	¼	AP32740
R42	2·2k	10	¼	AP32908
R43	1·5k	10	¼	AP32896
R44	2·2	±½ ohm	¼	AP33182
R45	2·2	±½ ohm	¼	AP33182

RESISTORS, VARIABLE

Reference	Value (ohms)	Description	Part Number
RV1	25k	Volume	AP81677
RV2	25k	Tone	AP81677
RP1	2·2k	Disc. balance	AP81680
RP2	10k	Pre-set	AP43233
RP3	200	Pre-set	AP81349

COILS AND TRANSFORMERS

Reference	D.C. Resistance (ohms)	Description	Part Number
L1	1·4	M.W. aerial coils	BS81420
L2	less than 0·5		
L3	9·5	L.W. aerial coils	AS72327
L4	1·5		
L5	0·75		
L6	less than 0·5	V.H.F. input transformer	CS81801
L7	less than 0·5		
L8	less than 0·5	R.F. coil	AP81802
L9	less than 0·5	I.F. rejector coil	AP81993
L10	3·0	A.M. oscillator coil	AP81414
L11	less than 0·5	I.F.T.1, 1st f.m.	BS81790
L12	less than 0·5		
L13	less than 0·5	F.M. oscillator coil	AP81884
L14	less than 0·5	I.F.T.2, 2nd f.m.	CS81678
L15	less than 0·5		
L16	8·0	I.F.T.3, 1st a.m.	CS67104
L17	8·0		
L18	less than 0·5	I.F.T.4, 3rd f.m.	CS81678
L19	less than 0·5		
L20	8·0	I.F.T.5, 2nd a.m.	CS67104
L21	8·0		
L22	less than 0·5	I.F.T.6, f.m. discriminator	CS67165
L23	less than 0·5		
L24	less than 0·5		
L25	9·5	I.F.T.7, a.m. detector	CS67106
L26	1·75		
L27	less than 0·5	Filter	AS82084

TRANSISTORS AND DIODES

Reference	Type	Description	Part Number
VT1	AF178	R.F. amplifier, f.m.	AP43176
VT2	AF115	Mixer, f.m.	AP65441
VT3	AF117	Oscillator, a.m.	AP67812
VT4	AF116	Mixer, a.m.; 1st i.f. amp., f.m.	AP65439
VT5	AF116	I.F. amplifier	AP65439
VT6	AF116	I.F. amplifier	AP65439
VT7	AC127	Audio amplifier	
VT8*	OC81	Driver	Pack LFK4
VT9	AC127	Output stage	AP34470
VT10*	OC81	(complementary pair)	
D1	OA79	F.M. detectors (matched pair)	AP29924
D2	OA79		
D3	OA90	A.M. detector	AP65044

* Type AC128 on some receivers.

MECHANICAL COMPONENTS

Title	Part Number	Description
Cabinet Base		
Cabinet base assembly	DS81437	with fittings
Battery retainer (2)	BP81318	neoprene strap
Cabinet Front		
Badge (earlier version)	DP80779	less rubber washer and clip
Bezel (earlier version)	DP81338	trim surrounding and retaining grille
Cabinet front assembly (earlier version)	AS72326	with fabric, grille, badge, and bezel, less loudspeaker
Cabinet front assembly (later version)	AS48566	with fabric, grille and label, less loudspeaker
Clip, push-on-fix (2)	AP80218	for securing badge on earlier version
Grille (earlier version)	CP81373	for loudspeaker, less badge
Grille (later version)	CP72268	for loudspeaker, less label "M"
Label "M"	CP72267	for grille on later version
Loudspeaker	DP81679	8 in. by 5 in., 25 ohms impedance
Nut, Spire Speed (3)	AP60766	for securing chassis fixing screws
Cabinet Rear		
Cabinet rear assembly (earlier version)	AS45864	with fittings
Cabinet rear assembly (later version)	ES81798	with fittings
Cabinet Top		
Cabinet top assembly	DS81796	with scale, pointer and trim
Clip, rod (2)	AP81333	for retaining ferrite rod
Pin (4)	AP81312	for securing scale
Pointer assembly	BS81427	with felt pads
Push-on-fix (4)	AP80218	for retaining pins securing scale
Scale, printed	DP81673	less fixings
Trim	CP81344	escutcheon for knobs and buttons
Washer, rubber (4)	AP81313	on pins securing scale

Cabinet Miscellaneous		
Clip (4)	AP81331	for fixing cabinet front to cabinet rear
Handle	DP81339	less pins, felt washers and push-on-fixes
Pin for handle (2)	AP81341	handle pivots
Push-in-fix (4)	AP81330	strips securing cabinet front to cabinet rear
Push-on-fix (2)	AP80682	for securing pins for handle
Trim, sprayed (2)	CP81305	between side joints of cabinet halves
Washer, felt (4)	AP80092	between handle and trim and handle and pin
Chassis (less tuning drive)		
Aerial, telescopic	CP81671	v.h.f. aerial
Board, printed circuit	DS81788	i.f. and audio, with components and transistors
Board, printed circuit	DS81789	r.f. and switch mounting with components and transistors
Board, printed circuit	CS81803	f.m. tuner, with components and transistors
Bush	AP81669	for aerial mounting bracket
Button, moulded (5)	CP81316	white, for wavechange switch, less clips
Can, screening	AP81670	for f.m. printed circuit board
Clip, retaining (2)	AP81326	for securing chassis and cabinet top in cabinet
Clip (10)	BP81359	for retaining push-buttons
Clip, spring (2)	AP81329	for retaining Volume and Tone controls
Connector, battery (2)	AP63404	positive
Connector, battery (2)	AP63405	negative
Core, ferrite rod	AP81332	aerial rod, less coils
Core, iron dust (7)	AP65982	for i.f.t's. 1, 2, 4 and 6
Core, ferrite	AP65011	for i.f.t's. 3, 5 and 7
Core, ferrite	AP81395	for L10, a.m. oscillator coil
Socket, miniature	BP64380	for earpiece, with nut
Switch, wavechange	CP81674	less buttons
Tuning Drive and Gang Mounting		
Bush, rubber (3)	AP12418	grommets for mounting gang
Clip, "C"	AP60146	for securing drum
Circlip, external	AP81325	for retaining tuning spindle
Cord, glass nylon	160 000 001	for tuning drive, 40 ins. long
Drum and pinion	AS81846	less torsion spring
Gear, driven	CP63035	on gang spindle, less spring
Knob, moulded	CP81315	Tuning control, less compression ring
Plate and spindle	AS81845	bearing plate for drum and pinion
Ring, compression	AP28617	for Tuning control knob
Spacer, 0·203 in. (3)	AP60381	for gang mounting
Spindle	AP81324	tuning drive
Spring, extension	AP63031	on driven gear
Spring, torsion	AP67014	for drive cord, inside drum

MODIFICATIONS